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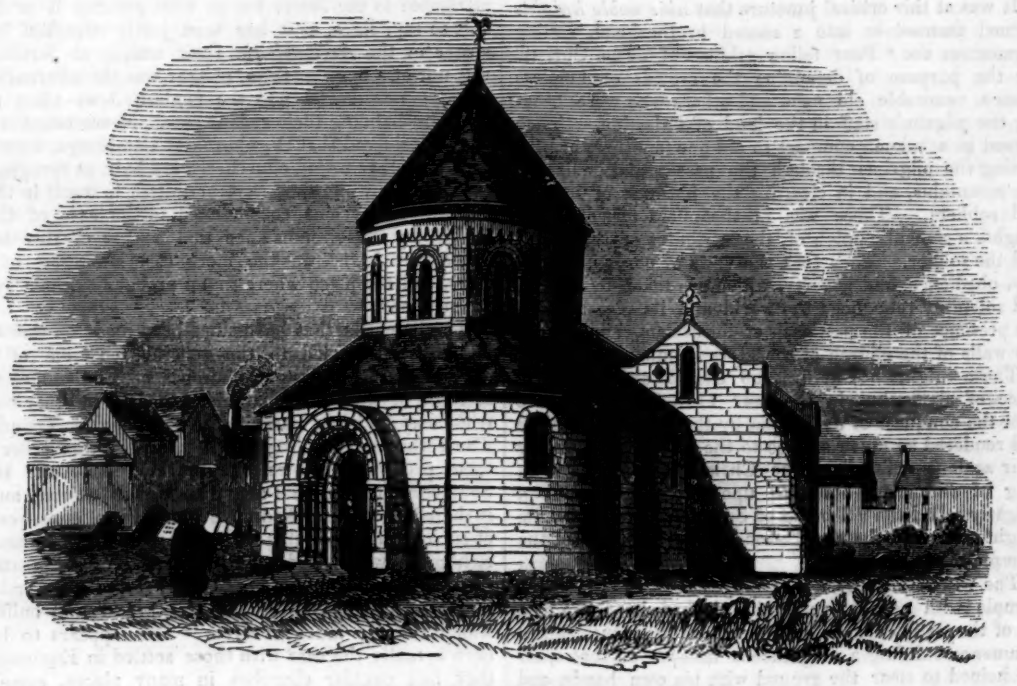
THE ROUND CHURCHES OF ENGLAND



ST. SEPULCHRE'S CHURCH, CAMBRIDGE.

I.

In presenting our readers with an historical account of the Round Churches of England, we feel that we may greatly enhance the interest attaching to the subject by sketching, as briefly as may be consistent with the nature of the narrative, the history and exploits of the valourous knights to whom they are supposed to owe their origin. We purpose, therefore, in each article of our present series, to give a portion of the history of the Knights Templars, as a preface to our account of the building under consideration.

The circumstances which led to the institution of the Knights Templars were the alleged discovery of the Holy Sepulchre by the Empress Helena, the mother of Constantine, about 298 years after the death of Christ, and the subsequent erection of the magnificent Church of the Holy Sepulchre*, over the venerated monument. This led to that tide of pilgrimage which set in towards Jerusalem. Eager multitudes pressed on to see the spot where their Lord lay, and that which at first originated in the ardour of devout minds was at length converted into a necessary and meritorious act; so that numbers were so far misled, as to suppose that a pilgrimage to the sacred sepulchre was sufficient to atone for an evil life, and to establish a title to heaven. Yet it cannot be doubted that many of the early Christians were prompted by feelings of the purest devotion to visit those places which had been consecrated by the death and passion of the Redeemer. And if the mind of the traveller is awakened to a train of profitable reflection by viewing the ruins of Persepolis, Baalbec, and Palmyra, and by feeling the awful silence which reigns around the gigantic Pyramids of Egypt, or the mourufal influence imparted by the beauteous but decaying temples of Greece, cold indeed must be the philosophy which could steel the heart against the conflicting emotions arising at the sight of Mount Calvary and of the prostrate condition of that city which was once "the beauty of holiness and the joy of the whole earth."

The rage for pilgrimage went on increasing, even when Jerusalem was surrendered to the victorious Arabians, in A.D. 637, for the Caliph Omar gave the following guarantee to the Christian patriarch:—

"From Omar Ebno'l Alchitab, to the inhabitants of Ælia." "They shall be protected and secured both in their lives and fortunes, and their churches shall neither be pulled down nor made use of by any but themselves."

In the year 1064, the Holy Sepulchre was visited by a band of seven thousand pilgrims, headed by the Archbishop of Mentz and the Bishops of Utrecht, Bamberg, and Ratisbon, but the year following Jerusalem fell into the hands of the Turcomans, and the pilgrims began to be fearfully oppressed. They were plundered, imprisoned, and frequently massacred; a tax was exacted from them for admission into the Holy Sepulchre, and many, unable to pay it, were obliged to return to their distant homes in sorrow, without having attained the object of their toilsome pilgrimage. This state of things aroused the sympathy of the Christian world; and, according to the historian, "a nerve was touched of exquisite feeling, and the sensation vibrated to the heart of Europe."

It is not our purpose to describe the wild enthusiasm which then spread abroad, or the formation of the first

* See *Saturday Magazine*, Vol. III. p 126.

crusade The design which was then formed of rescuing the Holy Sepulchre from the hands of the infidels was no sooner carried into effect, than promiscuous crowds of persons of both sexes, and of various ages, set forward to Palestine. But though the Christians had recovered possession of Jerusalem itself, they had not been able to dispossess the heathen of the surrounding country, so that on the arrival of the pilgrims they found the mountains on the sea coast infested by bold and warlike bands, and whether they approached Jerusalem by land or sea, they were equally exposed to hostility, plunder, or death.

It was at this critical juncture that *nine noble knights* formed themselves into a sacred brotherhood, calling themselves the "Poor fellow-soldiers of Jesus Christ," for the purpose of defending the crowds of helpless women, venerable old men, and others who were bearing the pilgrim's staff in the land of Palestine. They agreed in a solemn compact to aid one another, in protecting the pilgrims through the passes and defiles of the mountains, and in clearing the highway of infidels and robbers. There was in the character of these knights a romantic union of the attributes of the monk and the soldier. They took the vows of perpetual chastity, obedience, and poverty, which are taken by monks, and solemnly renounced the world and its pleasures in the presence of the patriarch of Jerusalem, and within the walls of the church of the Holy Sepulchre.

These knights had at first no church and no settled place of abode, but in the year 1118 (nineteen years after the conquest of Jerusalem by the Crusaders,) they had rendered so much service to the Christian cause, by their zealous defence of the Christians, that Baldwin, king of Jerusalem bestowed upon them the building, vulgarly called the "Temple of Solomon," and hence the knights obtained the appellation of the "Knights of the Temple of Solomon."

The Musselmen ever regarding the site of the Jewish Temple with peculiar veneration, it had been the first act of the Caliph Omar, on the capture of Jerusalem, to commence building a magnificent mosque on that spot. He helped to clear the ground with his own hands, and traced the foundations of that noble structure which still "crowns with its dark and swelling dome the elevated summit of Mount Moriah." This Musselman temple is one of the finest specimens of Saracenic architecture in existence, and it was this important building which Baldwin assigned to the brave and holy knights. Various gifts and revenues were also bestowed upon them, and the canons of the Temple of the Lord, or church of the Holy Sepulchre, conceded a large court extending between that building and the Temple of Solomon, to the "Poor fellow-soldiers of Jesus Christ."

The knights now extended the objects of their institution, and in addition to the defence of pilgrims, undertook the protection of the Christian kingdom of Jerusalem, of the Eastern church, and of all the holy places. Their power and numbers now rapidly increased: two of their most distinguished members were Hugh de Payens and Geoffry de St. Aldemar, or St. Omer, and the former of these, having been chosen by the knights as the superior of their new religious and military society, has been called the "Founder of the order of Templars."

It now became necessary to draw up a regular code of laws for the guidance of the new society, and for this purpose an application was made to a most powerful ecclesiastic, known as St. Bernard, the holy abbot of Clairvaux. This learned prelate was a great admirer of the Templars, and undertook their cause with all the zeal for which he was so remarkable. He obtained the convocation of a great ecclesiastical council in their favour, at Troyes, and to him was eventually confided the task of framing a code of statutes, fit and proper for the governance of the religious and military fraternity. This code has much in it that is worthy of our admiration, as well as much that is of a gloomy and severe character. We shall present our readers with a few extracts from St. Bernard's rules, on a future occasion; but it is now time that we refer to the subject of our engraving.

There are four examples of round churches in England, *i. e.*, St. Sepulchre's church at Cambridge, St. Sepulchre's church at Northampton, the Temple church, London, and a small church at Little Maplestead, in Essex. The building of these churches was at one time attributed to the Jews; but on what grounds it is difficult to say, since, as it has been justly remarked by a writer in the *Archæologia*, their temple at Jerusalem was not of a circular form, neither was the tabernacle of Moses; nor do we find the modern Jews affect that figure in building their synagogues. Nevertheless it has been considered that the church at Cambridge, together with the other round churches, were built as synagogues by the Jews while they were permitted to dwell in those places. This seems contradicted in the case of Cambridge, by the circumstance that a part of that town called the Jewry, was the more especial resort of the Jews, and the place where in all probability their synagogue stood.

The inquiries that have since been made on this subject, have now led to the general reception of the opinion that the circular churches of England, as well as those of a similar character and date in other countries, may be justly attributed to the Knights Templars. The enthusiastic feeling which pervaded this order led them professedly to esteem the church of the Holy Sepulchre at Jerusalem above all earthly objects, and it is therefore to be looked upon as a natural consequence of such enthusiasm, that when the Templars became a rich and powerful body, and acquired establishments in many of the countries of Europe, they should imitate in their religious edifices, the structure of that building which they so much revered. This appears to have been actually the case with those settled in England, as they had circular churches in many places, some of which were dedicated to the Holy Sepulchre. There were, according to Stow, temples belonging to this order at London, Cambridge, Bristol, Canterbury, Dover, Warwick, &c. There were also round churches existing formerly at Temple Bruer, and at Aslackly, Lincolnshire.

The subject of our present notice is considered the most ancient of the four remaining circular churches in England, and it is on this account that we have given it the priority in our series. Although the records relating to the time of the erection of this building have all been lost, yet the peculiarities of style are sufficient to establish satisfactory evidence as to its date. Mr. Essex asserts that the present round church was built in the reign of Henry the First, or between the first and second crusades, and may therefore be considered the oldest church of this form in England.

This building (as it appeared before the restoration lately effected by the Camden Society) is described by Mr. Britton, as consisting of a circular wall originally perforated with six semicircular-headed windows and an ornamented doorway of the same shape. The doorway is still perfect, and apparently in the original style of decoration, but the windows have all been altered by widening, and the introduction of mullions, &c. Within the outer wall is a circular colonnade of eight columns. These are short and massy, without any base, and with a narrow ornamented capital which varies in different columns. Eight semicircular arches spring from these, besides some groined mouldings, which help to support the arched roof of the surrounding aisle. Some of these arches are indented with the zig-zag ornament. There is above these arches a continued arcade, which

originally opened to the gallery over the aisle, but the apertures are now walled up. Two small semicircular arches beneath one archivault opened immediately over the lower arch, and between each of the two arches is a large short column, the diameter of which is nearly equal to the height, and two small three-quarter columns attached to it. These are believed to be the only examples of the kind in England, and probably present the first specimen of a clustered column. Over this are two tiers of windows, raised one story for the reception of bells, in the reign of Edward II., and all these windows (except one on the east side just over the junction of the circular with the other part of the building) were then altered to give more light. The first story of the tower above the church is octangular, and the upper story is divided into sixteen sides. The western entrance to the building is particularly fine, and the mouldings and sculptured ornaments are still perfect. There has been originally a porch. Six three-quarter columns support three archivault mouldings.

The masonry of the ancient circular wall, as well as of the columns, evinces much skill, the stones being all squared and chiselled with mathematical accuracy to fit their respective situations. It is to be regretted that the original design and character of the building should have been so much obscured by the injudicious operations of the carpenter, bricklayer, and whitewasher.

Public attention was more especially directed to the state of this church during the last year, in consequence of the sinking of a portion of the foundation, occasioned by digging graves in the church,—a practice to be deprecated in all cases, but more especially in small and ancient churches. The parish being of small extent, the inhabitants would not be able to do more than to repair the damage in the humblest manner; a subscription was therefore opened among the members of the University, and with the aid of the Cambridge Camden Society, which has taken the management, not only of the repairs, but also of restoring the circular portion of the church to its pristine character. It is proposed to add a new aisle to the south chancel, to take off the belfry story, which is comparatively modern, and surmount the circular part of the church with a conical roof, to clear away the accumulated earth from the exterior walls, and to erect a belfry-tower for the reception of a peal of bells. The curious character of the edifice,—one of the earliest imitations of the Holy Sepulchre in England,—as well as its situation in one of the Universities, entitle it to national reverence, and justify the claims made on the antiquary and the churchman.

Since the time when these particulars were published, the repairs of the church have been steadily and successfully proceeding. The walls and bases of the columns have been strengthened by a bed of concrete, the groinings of the aisles have been restored, and the round tower secured by iron bands. The belfry tower has been taken off, and the original part of the tower is now surmounted by its appropriate conical head, covered with gray Northamptonshire slates. The semicircular Norman windows have been restored according to the model of one which remained in the clerestory; and the gallery and pews have been cleared away from the circular part. The foundations of the south aisle are in the course of excavation, and the groining of the nave is almost completed. During the progress of the work, the fragments of the original chancel arch have been fortunately discovered, and it is therefore proposed to restore so interesting an addition to the building.

But at this period the committee find themselves obliged to hesitate on account of the failure of their funds. They therefore again appeal to the public on behalf of their ancient church.

Our illustration is taken from a lithograph of the Church of the Holy Sepulchre (as it will appear when perfectly restored) published by the Cambridge Camden Society.

RURAL ECONOMY FOR THE MONTHS.

AUGUST.

'Tis a fair sight, that vest of gold,
Those wreaths that August's brow infold!
O 'tis a goodly sight and fair
To see the fields their produce bear,
Waved by the breeze's lingering wing,
So thick they seem to "laugh and sing;
And call the heart to feel delight
Rejoicing in that bounteous sight
And call the reaper's skilful hand,
To cull the riches of the land!—MARY'S *British Months.*

THE approach of harvest must always be looked upon with extreme interest, and the state of the crops, involving as it does the welfare of thousands, is naturally the subject of conversation among all classes of persons, at this season of the year, as well as of anxious thought to those more immediately concerned in the operations of the field. The time of harvest is inevitably one of great expense to the agriculturist; no efficient machine has yet been invented by which the amount of human labour might be lessened, although several ingenious attempts have been made to attain the desired result: the British labourer is therefore still employing that most ancient implement, the reaping-hook, while almost every other workman in the country is turning to account the inventions and improvements of modern times. How far it might be advisable to apply machinery to the reaping of corn, even were it possible to overcome the difficulties arising from inequality of soil, &c., will probably excite much difference of opinion; but in a climate like ours, where the fickleness of the season presents such a formidable impediment to the security of our crops, we might probably be induced to give up the poetical associations connected with the train of reapers in our fields, and, in the prospect of more quickly secured and wholesome food, might listen with less aversion to the grating sound of wheelwork instead of to the merry laugh of the rustic throng. Yet before we could make the exchange without reluctance, it would be necessary to ascertain that the labouring classes would receive no injury by the substitution of machinery in reaping, but that the binding, stacking, &c., would still furnish sufficient work for the farmer's own labourers, and only relieve him of the expense of extra hands and unreasonably high wages; while the better state in which the corn might be secured and the moderate cost attending the process, might lead to a reduction in the price of bread, and a consequent benefit to all classes. All these things have to be well considered before we can decide on the benefits likely to results from the general introduction of a reaping-machine. The reaping-hook, as at present used, is one of the oldest implements employed in husbandry. That principally used in England has a smooth blade of wrought iron or steel about twenty-five inches long, and curved nearly to a semicircle. The hook preferred by the Irish labourers varies a little from this, having a finely serrated or toothed edge and receding towards the lower point, from the curved direction to nearly a straight line.

It is of great importance to the farmer to ascertain the exact time when it will be best to commence harvest. and to make such previous preparations, that when the due season arrives he may have nothing to take off his attention from the main concern. It is a business which demands his unceasing personal attention, and it has been justly remarked, that the man who wishes to have his harvest rightly managed, must superintend it without intermission from the dawn of the day until its final close. The previous preparations consist in the thorough sweeping out and repair of barns, the repair of stack-frames, and attention to the condition of tools. Straw-bands should be in readiness for tying the sheaves, as well as ropes for securing stacks; and arrangements should be made for the regular supply of everything

necessary for the labourers, that all delay may be avoided. The master will also find it necessary to maintain strict order and good temper. Strife and irregularity sadly mar the business of the day.

The state of ripeness at which wheat ought to be cut is an important subject for consideration. The present practice of agriculturists inclines to an earlier reaping than was formerly considered advisable; and that such a practice is founded on reason, and produces advantageous results, the following remarks will help to prove. The subject has been ably discussed by Mr. Hannam, of North Deighton, Yorkshire, in a communication which appears in the 12th volume of the *Quarterly Journal of Agriculture*, and we have given an account of his experiments in his own words. An agriculturist whose experience extended over half a century, and who was locally noted for producing good samples of wheat, informed Mr. H. that he was in the habit of commencing harvest a week or ten days before the generality of farmers, it being his practice to reap his wheat before it became quite ripe. Some months afterwards Mr. H. observed from a notice in the newspapers, that a certain learned Professor had proposed reaping wheat *quite green*. Mr. H. now determined to take the first opportunity of giving both systems a fair trial. Concerning this trial he gives us the following details and results.—

Having selected a field of "old square-headed red wheat" for the experiments, on August 4, 1840, I cut a sheaf. At this time it was quite green, *i. e.*, both straw and ears were in full vigour, and full of sap. Though the grain appeared perfectly formed, the chaff still adhered so firmly to it that it was scarcely possible to separate them by friction in the hands. When separated it was large and plump, but so full of milk that the slightest pressure reduced the whole to a juicy consistency or pulp. This sheaf stood in the field for a fortnight, when it was housed.

On the same day, [*i. e.*, when the former sheaf was housed,] August 18, I cut another. The wheat was of course yet *green*, speaking positively, or *not ripe*, speaking negatively, being what farmers commonly term *raw*. That is, the straw, though appearing at a distance green, when examined closely was of a hue fast approximating to yellow; while for about a foot upwards from the ground it was *quite* yellow. The ears, too, were more open, the chaff tinged with various shades of yellow and green, and the grain itself, when separated, soft and pulpy, but not near so full of fluid as before. The judgment of the farmer will, however, best tell him the conditions of the wheat, both at this and at the preceding cutting, when I say that in another fortnight the whole field was ripe. At the end of this fortnight (September 1) I housed the sheaf cut on August 18, and which had remained exposed to the weather in the interval, and cut a third. This I have said was *ripe*, but by the term I don't mean that degree of ripeness when the straw breaks, the ears curl, and the grain shakes out; but that condition in which it is customary to commence reaping it, —when the straw, from the roots to the ear, is uniformly yellow, and has lost all symptoms of vivid health. On the 14th September the third sheaf was taken from the field and carefully preserved along with the other two, till the 1st of November, when out of each sheaf I selected 100 ears, and put each parcel into a separate bag. The straw from each of these parcels of ears was preserved carefully.

The results of these experiments were most carefully tested by Mr. Hannam; an extremely accurate balance was made use of, and the investigations were repeated several times. He gives an elaborate account of the method employed to obtain the true results, and according to his tables the wheat reaped a *fortnight* before it was ripe, had the advantage in every point. Yet believing in the old saying,

> The proper value of a thing
> Is just as much as it will bring,

he attended market and asked the opinion of an extensive corn-grower as to the value of the respective samples, according to the prices of the day. His opinion was that the sample, No. 1, or that cut green, was worth 61*s.* per quarter, No. 2, or the raw, 64*s.* do. No. 3, or the ripe, 62*s.* do. The same samples were put into the hands of an extensive corn-factor and miller; his value and what he would give to buy, was No. 1, 61*s.* per quarter; No. 2, 63*s.* do.; No. 3, 61*s.* do. No. 1 was a good clear sample, but much smaller than either of the others, No. 2 was very bold but fine and thin in the skin, No. 3 was as bold as No. 2, but rather coarse, feeling rough in the hand. Extending his calculations and supposing three acres of wheat treated in a similar manner, Mr. Hannam produces the following account of the total products,

	£	*s.*	*d.*
No. 3, reaped when ripe .	12	17	3½
No. 2, ditto, a fortnight earlier	13	7	3½
No. 1, ditto, a month before ripe	11	11	10½

showing a loss of 1*l.* 5*s.* 5*d.*, or about 10 per cent. by cutting very green, and a gain of 10*s.* per acre, or nearly 4 per cent., by reaping in a raw state, or a fortnight before it was ripe. Thus it would appear that it is to the farmer's interest to cut his wheat a fortnight before it becomes thoroughly ripe; for independently of the 4 per cent. gain, the straw is of a better quality, there is a better chance of securing the crop, and a saving in securing it. It is true the straw is still more valuable in wheat cut a *month* before it is ripe, but to produce that increase of value we have a drying up of the grain to such an extent as to diminish the measured produce above 12 per cent. By commencing harvest a fortnight earlier than is customary we evidently gain so much valuable time, and secure a great portion of wheat which might otherwise suffer damage. Early harvests are, generally speaking, good ones, *i. e.*, good as regards the weather and the condition in which the grain is secured.

The saving in securing the crop on this plan is a double one, inasmuch as there is less waste in mowing or reaping, and also an absolute economy in the expense of reaping the crop.

How often do we, (says Mr. Hannam) especially in the North, behold a force of reapers in almost every field. The reason is this: the wheat, barley, and oats, are often ripe at one time, and aware as the farmer is of the injury which strong winds and showers would do them, he has to hunt up labourers at any price. And after all this extra expense, it is extremely probable that, having the whole of his harvest upon his hands at once, he is compelled to let some of his grain have too little, or some too much weather. By commencing his wheat-harvest a fortnight earlier, these evils would have been prevented; by the time that his barley and oats were ready, most or all of his wheat would have been cut, and some of it fit for the stack, and that too, by the exertions of his regular workmen only. And being neither pressed for time nor labourers, his harvest would have been finished at a less expense, and his grain secured, very probably in a much better condition.

The mechanical part of harvest-work is so well known as scarcely to need description. Who is there among our readers that has been so completely immured in cities all his life, as not to have seen the sturdy reaper at his task? Who is there, that has not stopped to watch with interest the progress of the work, and to admire the regularity of the action by which the stems are collected in the left hand while the semicircular blade is inserted below, and drawn through them, or to notice the advantage arising from division of labour amongst the band of reapers, as one party is engaged in cutting the corn, another in gathering the sheaves, and a third in tying them and setting them up into stooks or shocks, which usually consist of ten or twelve sheaves.

In some places there is a measure employed to regulate the size of the sheaf, for it is against the farmer's interest to allow the reapers to make the sheaves too large, as the moisture does not evaporate with sufficient readiness, and greater damage is sustained in wet seasons. On extensive farms the practice of mowing corn with the scythe has often been adopted, on account of the saving both of time and expense, and it appears

that in certain cases it has answered well, and the corn has been in a fit state to carry, as soon as that which had been reaped.

When the season is unfavourable it frequently happens that the sheaves remain a long time in the field before they are dry enough to be carried: in this case the grains are likely to become soaked with wet, and to sprout in the ear, to the great loss of the farmer. In order to prevent as much as possible the bad effect of rains, it is the custom in some places to set up six or eight sheafs in a circle, with the butt-ends diverging, so as to allow of a free circulation of air, while another sheaf is opened by spreading out the ears, and is inverted over the tops of the rest so as for the whole to form a truncated cone. The butt-end of the top sheaf is thus the only part which receives the force of the rain, while the sloping sides carry off the chief part of the wet from the grain beneath.

Instead of the wooden frames on which stacks are usually built, a frame made entirely of iron has been introduced of late years. It is supported upon iron columns, and may be readily taken to pieces and put together again when it is wanted. This advantage of facility of removal will make the iron stack frame very convenient for a temporary purpose.

The ancient practice of gleaning, or, as it is called in some counties, *leasing*, is the universal accompaniment of the harvest. In some parts of the continent there exists a rule among the farmers that each gleaner shall work for one or two hours at the task of housing the crop, before he or she shall be allowed the privilege of gleaning in the field. These voluntary labourers are then permitted to have the range of the fields for a time proportioned to their services, after which the rest of the poor are allowed to enter indiscriminately. There is a mistaken notion prevalent in this country, that the poor have a *right* to glean in our corn-fields, whereas, by the law of our land, no such right exists; and it is entirely at the option of the owner whether they shall be permitted to gather up the ears of corn or not. There is too much humanity about the British farmer, to allow him to deny this privilege to his poor neighbours; but the misconduct which often arises from a mistaken notion on their part of the right they have in the matter, might almost tempt him to exclude them altogether. Under proper regulations and restrictions is to be hoped that this custom, derived from Scripture times, and made the subject of express directions to the people of Israel, may ever continue among us; but *stealing*, under the colour of leasing or gleaning, is one of the worst descriptions of theft, and all temptations to it should be avoided, by clearing the fields of the inviting sheaves before the poor are permitted to enter.

Harvest-home, or the feast given to the harvest men and women when the last corn is carried, is one of the good old customs which we should very much regret to part with. No gratuity bestowed as a substitute for this hospitable entertainment, can make up for the loss of the community of feeling engendered on such occasions, between the master and his servants. We have listened to the rustic songs, and to the hearty cheers with which the hospitality of the master and mistress have been celebrated, and have felt persuaded that nothing was so likely to check the risings of discontent among the labourers, or to inspire the master with more kindly feelings towards them, than this friendly and heart-cheering feast.

He who reads
Incessantly, and to his reading brings not
A spirit and judgment equal or superior,
Uncertain and unsettled still remains,
Deep versed in books, and shallow in himself,
Crude or intoxicate, collecting toys,
As children gathering pebbles on the shore.—Milton.

PARMESAN CHEESE.

The celebrated article of food known as Parmesan cheese is not the production of Parma, in the north of Italy, as its name would lead us to suppose, but of the country situated to the north of that duchy. The territory in which this manufacture is carried on lies in the province of Milano, and is confined to a tract twenty miles wide, from Pavia to Milan and Lodi, and double that in length, from Abbiate-grasso, by the Ticino, to Codogno, near the confluence of the Adda and the Po. The Italians call the cheese *formaggio di grana*, because it is commonly used in a granular form, being grated and brought to table to be eaten with soup. The word "formaggio" is derived from *formaticum*, a Latin term applied in the middle ages to cheese prepared in a *form*.

The peculiar qualities of this cheese seem to depend upon the method of preparing the curd, although the manufacturers pretend that much is due to the mode of feeding the cows, the chief peculiarity in which is to allow them to roam in the pastures during four or five hours out of the twenty-four, and to stall them during the rest of the time and feed them with hay.

The cows set apart for this production amount to about 80,000. It is seldom found profitable to rear them in the country, hence they are all imported from foreign parts, viz., Switzerland, the Tyrol, and Bavaria. They are bought from the age of three to four years at the numerous fairs held annually in Milano, between the months of October and March. Nearly 11,400 cows are thus imported every year: the price of each varies from fourteen to twenty pounds. Each cow continues to give milk abundantly for about seven years.

The cheese is made entirely of skimmed milk; one half of that which has stood sixteen or seventeen hours, and the other half of that which has stood only six. The cheese is made in the morning before sun-rise. The milk is put into a large brass vessel, five feet high, narrow at bottom and widening out like a trumpet to three feet in diameter at top. The milk is heated in this vessel, for which purpose a very ingenious fire-place is made use of; its form is that of an inverted semi-cone in brickwork, well adapted for preserving heat, and for the use of wood as fuel. The vessel can be removed from the fire by means of a crane. The form and arrangement of this part of the apparatus are shown in the figure above.

When the milk is sufficiently heated, runnet, in the form of a paste, is added, together with a little saffron, to impart the yellow colour to the cheese. Without being taken out of the caldron, the curd is broken very small by means of an implement consisting of a stick with cross wires; it is again heated or rather scalded, till the curd, now a deposition from the whey, has attained a considerable degree of firmness. The curd is then removed in a cloth, and packed within a broad wooden hoop, the sides of which are as high as the intended cheese. This hoop can be narrowed in diameter by means of a rope drawn tightly round it. The only pressure to which the cheese is subjected, is a board holding a small weight placed on the top.

The cheese is next removed to the salting-room: two cheeses are placed together, one above the other, with the broad hoops tightened round them. A quantity of salt is then placed on the top of the upper cheese: the salt dissolves, and the brine filters through the cheeses.

The cheeses are shifted from one place to another along the benches of the salting-room, and are beaten with a flat piece of wood, cut with straight-lined furrows intersecting each other. The sides are then painted with a mixture of litmus and oil, to give the purple colour. The cheeses are then taken to the magazine and piled on shelves in the order in which they were made; the cheeses of each month being regularly classified: those of October and May are the best and can be kept longest.

The cheese is sold twice a year. "La Sorte Maggiore" (May lot) is the summer produce; and "La Sorte Quartirola o Invernenga" (the winter lot), the winter produce. After receiving two or three years' seasoning in the warehouses of the merchants, who live principally at Codogno, in the province of Lodi, and at Corsico, in the province of Milan, the weight of the cheese has diminished five per cent. About half of it comprehends two inferior sorts, in the first of which the cheese is of bad quality; the other inferior sort is of good quality, but which, from some defect in the shape, cannot be exported, and is consumed in the country. The rest is chiefly disposed of abroad.

SPARE MINUTES.

MEDITATED RESOLVES AND RESOLVED MEDITATIONS.

THERE is no security in evil society, where the good are often made worse, the bad seldom better; for it is the peevish industry of wickedness, to find or make a fellow. 'Tis like, they will be birds of a feather that use to flock together. For such commonly doth their conversation make us, as they are with whom we use to converse. I cannot be certain not to meet with evil company, but I will be careful not to keep with evil company. I would willingly sort myself with such as should either teach, or learn goodness: and if my companion cannot make me better, nor I him good, I will rather leave him ill, than he shall make me worse.

To teach goodness is the greatest praise, to learn goodness, the greatest profit. Though he be wisest that can teach, yet he that doth learn is wiser. I will not, therefore, be unwilling to teach, nor ashamed to learn. I cannot be so ignorant, but I may teach somewhat, nor so wise but I may learn more. I will therefore teach what I know, and learn what I know not. Though it be a greater praise to teach, than to learn, yet it is a lesser shame to learn than to be ignorant.

As there is a misery in want, so there is a danger in excess. I would therefore desire neither more nor less, than enough. I may as well die of a surfeit as of hunger.

IT is the apish nature of many, to follow rather example than precepts: but it would be the safest course of all, to learn rather by precept than example. For there's many a good Divine that cannot learn his own teaching. It is easier to say, This do, than to do it. When therefore I see good doctrine with an evil life, I may pity the one, but I will practise only the other. The good sayings belong to all, the evil actions only to their authors.

THERE are two things necessary for a traveller, to bring him to the end of his journey, a knowledge of his way, a perseverance in his walk. If he walk in a wrong way, the faster he goes the further he is from home; if he sit still in the right way, he may know his home, but ne'er come to it; discreet stays make speedy journeys. I will first then know my way, ere I begin my walk: the knowledge of my way is a good part of my journey. He that faints in the execution, loseth the glory of the action. I will therefore not only know my way, but also go on in my way; I had rather my journey should want a beginning, than come to an untimely end. If heaven be my home, and CHRIST my way, I will learn to know my way, ere I haste to travel to my home. He that runs hastily in a way he knows not, may come speedily to an home he loves not. If CHRIST be my way, and Heaven my home, I will rather endure my painful walk, than want my perfect rest. I more esteem my home than my journey: my actions shall be led by knowledge, my knowledge be followed by my actions. Ignorance is a bad mother to devotion, and idleness a bad steward to knowledge.

I CANNOT but wonder at the folly of those hearts who are like to kill themselves with the fear of dying, making the news of ensuing mischief, a worse mischief than that they have news of: whereas the fore-knowledge of an approaching evil is a benefit of no small good. For if it cannot teach us to prevent it by providence, it may show us, how to sustain it by patience. I may grieve with the smart of an evil, as soon as I feel it: but I will not smart with the grief of an evil, as soon as I hear of it. My evil, when it cometh, may make my grief too great; why then should my grief, before it comes, make my evil greater?

As I see in the body, so I know in the soul; they are oft most desperately sick, who are least sensible of their disease: whereas he that fears each light wound for mortal, seeks a timely cure, and is healed. I will not reckon it my happiness that I have many sores, but since I have them, I am glad they grieve me. I know the cure is not the more dangerous, because my wounds are more grievous: I should be more sick if I complained less.

[ARTHUR WARWICK, 1637.]

GALILEO. II.

> Nearer we hail
> Thy sunny slope, Arcetri, sung of old
> For its green wine; dearer to me, to most,
> As dwelt on by that great Astronomer,
> Seven years a prisoner at the city-gate,
> Let in but in his grave-clothes. Sacred be
> His villa (justly was it called The Gem!)
> Sacred the lawn, where many a cypress threw
> Its length of shadow, while he watched the stars!—ROGERS.

WE resume our notice of Galileo's career at the epoch of the invention of the telescope, one of the greatest contributions which art has ever made to science.

In the year 1609 Galileo heard that a Dutchman, named Jansen, had presented to Prince Maurice of Nassau, an optical instrument which caused distant objects to appear large and near to the observer. As soon as he found that the report was something more than a mere rumour, he set about considering what combination of optical properties would be likely to lead to such a singular result as this. He procured a tube and placed in it two spectacle-lenses, one plano-concave, and the other plano-convex; these he found to have the effect described as having been produced by Jansen. He carried this "eye-tube," as it was called, to Venice, where it excited the most intense curiosity; and having learned that the Senate would be highly pleased at having it presented to them, he took the hint, and gained their good-will, as well as a large increase in his salary, as Professor at Padua.

When Galileo returned to Padua, he proceeded to make a scientific use of his new discovery; while the opticians, by making "Galileo's eye-tubes" as optical toys, reaped a rich harvest. The instrument first made by Galileo, and which soon afterwards received the appropriate name of "the telescope," magnified only three times. He then made a second with a power of eight times, and a third, after great labour and expense, which magnified thirty times. With this valuable instrument he began to explore the heavens. He soon detected, in the visible disk of the moon, ranges of mountains, deep hollows, and other irregularities of surface, which he immediately described and commented on to the philosophers of Italy. But these men had been instructed in the old routine of philosophy, by which the moon was laid down as a perfectly smooth globe or

sphere; and they received with great delight his experimental discoveries.

He next discovered that the planets, when viewed through his telescope, exhibited variations in size, and also *phases* similar to those of our moon; thus showing the difference between them and the fixed stars. He found, too, that nebulæ, and that remarkable whitish portion of the heavens, called the *milky-way*, were composed of myriads of minute stars. But these discoveries were greatly eclipsed in importance by another which he made on January 7th, 1610,—a day to which astronomers and navigators refer as the commencement of a new era in practical astronomy. On regarding the planet Jupiter, Galileo observed three stars near the body of the planet. He thought they were fixed stars; but on the following night he found their *relative positions* to have changed,—a circumstance which never happens to the fixed stars as viewed from the earth. Perplexed by this circumstance he watched again and again, and revolved in his mind the most probable explanation of the phenomenon; and at length he boldly announced that "there were in the heavens three stars which revolved round Jupiter, in the same manner as Venus and Mercury revolve round the sun." A few days afterwards he discovered a fourth; and these four constitute what are now known as the "Satellites of Jupiter," which are so invaluable in the calculation of longitudes, and other astronomical problems.

The reception which this great discovery met with was very different, from different classes of men. Kepler, a contemporary of Galileo, says that he was one day sitting idle, thinking of his Paduan friend, when Wachenfels stopt at his door to communicate the intelligence. "Such a fit of wonder," says he, "seized me at a report which seemed to be so very absurd, and I was thrown into such agitation at seeing an old dispute between us decided in this way, that between his joy, my colouring, and the laughter of both, confounded as we were by such a novelty, we were hardly capable, he of speaking, or I of listening." On the other hand many of the Italian philosophers (so called) refused to believe even the evidence of their own eyes, when it ran counter to their pre-conceived ideas. One of them started an objection which can only be laughed at in the present day, viz., that as there are only *seven* apertures in the head—two eyes, two nostrils, two ears, and one mouth,—and as there were only *seven* metals, and *seven* days of the week, so that there could be only *seven* planets! Fortunately for Galileo and for science, the Grand Duke of Tuscany, who was his patron, was a man of liberal views, and well able to appreciate the importance of such discoveries as these.

Shortly after this event Galileo discovered the ring which surrounds the planet Saturn, but he did not at first designate it as such, deeming it to be two very small planets, one on each side of the larger one. He also found, while on a visit at Rome, that the disk of the sun is diversified by spots, bearing some resemblance to those of the moon. He was accustomed, in his letters to his friends, to give a lively account of the doubts and progressive opinions which he entertained on the subjects of his discoveries. Thus, some time after he had seen what appeared to him to be two stars, at the side of the planet Saturn, he viewed the planet again when the edge of the ring was towards the earth, and invisible through a telescope of low power; and he says:—

Looking on Saturn within these few days, I found it solitary, without the assistance of its accustomed stars, and in short perfectly round and defined like Jupiter; and such it still remains. Now what can be said of so strange a metamorphosis? Are the two smaller stars consumed like the spots on the sun? Have they suddenly vanished and fled? Or has Saturn devoured his own children? Or was the appearance indeed fraud and illusion, with which the glasses have for so long a time mocked me, and so many others who have often observed with me?

The time was now approaching when Galileo was to feel the powerful effect of that opposition which his scientific discoveries had all along experienced. He really despised his opponents, because he felt that they could not appreciate the value of his pursuits; he was indiscreet enough to give utterance to his contempt in the most unmeasured and sarcastic terms. Among the truly scientific his name was held in the greatest honor; he was protected by a prince of enlightened and liberal views; and he enjoyed an income which enabled him to supply his limited wants. He thus felt still more contempt for those who abused him, because they could not understand him, and hurled against them bitter sarcasm as well as sound argument. Of this conduct it has been well observed:—

In this unrelenting warfare, he seems to have forgotten that Providence had withheld from his enemies those very gifts which he had so liberally received. He who is allowed to take the start of his species, and to penetrate the veil which conceals from common minds the mysteries of nature, must not expect that the world will be patiently dragged at the chariot wheels of his philosophy. Mind has its inertia has well as matter; and its progress to truth can only be ensured by the gradual and patient removal of the obstructions which surround it*.

Although this hostility between Galileo and those who could not or would not agree with him, had been of long standing, yet it was not till 1613 that an outbreak occurred, the forerunner of the misery which Galileo subsequently experienced. He published a letter or pamphlet, which was immediately attacked by a Dominican friar as containing matter hostile to the received doctrines of the Romish Church. Galileo, in an eagerness to show that such was not his object, wrote a very long pamphlet, in which he argued that it was not inconsistent with religious truth to believe the Corpernican doctrines relative to the planetary motions of the solar system. This pamphlet was written in such a style, that while it carried conviction home to the minds of those who were prepared to appreciate Galileo's arguments, it rendered still stronger the wish on the part of his opponents to crush him. A complaint was made to the order of Dominicans, and by them to the dreaded Inquisition.

Galileo, perceiving that a plot was formed to ruin him, obtained leave from the grand duke of Florence to go to Rome, in order to meet his enemies. He had scarcely arrived there when he was seized by the officers of Inquisition, and was then distinctly charged with "maintaining the motion of the earth, and the stability of the sun; with teaching this doctrine to his pupils; with corresponding on this subject with several German mathematicians, and with having published it, and attempted to reconcile it with Scripture." The secret tribunal required him to renounce the obnoxious doctrines, and to pledge himself that he would neither teach, defend, nor publish them in future. Galileo promptly complied, and was then dismissed from custody.

One of two things seems tolerably plain, either that he should not have made this promise, or that, having made it, he should have adhered to it. He adopted neither plan, but continued to hold controversies on the obnoxious doctrines, in defiance of the cautions which he received; and would probably have speedily brought himself again into trouble, but for the high personal respect entertained for him by the Pope.

During the next few years, Galileo directed his attention to various scientific subjects, which he enriched by his sagacity. He conceived the idea of finding the longitude at sea by means of Jupiter's satellites; and offered his services to the King of Spain, to carry out this important object; but for some cause or other his offer was not accepted. The appearance of three comets in the year 1618, gave Galileo an opportunity fo- indulging in another of those scientific controversies

* *Cabinet Cyclopædia* Life of Galileo,

which seem to have possessed an inexpressible charm for him. He wrote, or at least assisted a friend in writing, a theoretical discourse on comets; which was immediately attacked by a Jesuit named Oratio Grassi; and to this Galileo wrote a long reply, which has been characterized as one of the least valuable but the most elegant of his writings.

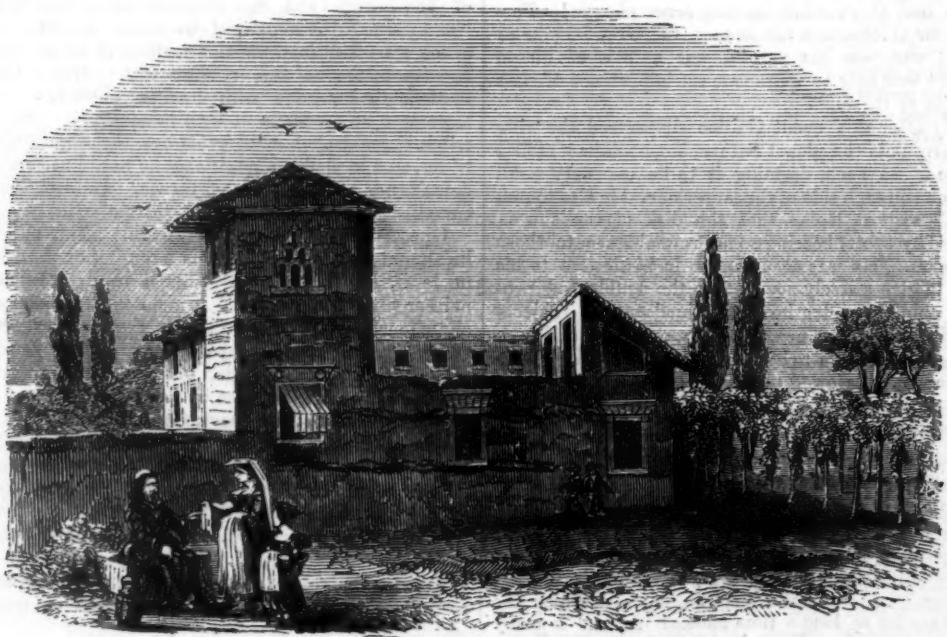
In the year 1623, Cardinal Maffeo Barberini, a personal friend to Galileo, was raised to the papal chair; and the philosopher immediately took advantage of this circumstance to ensure, as he could, a favourable reception for the various philosophical doctrines on which he had set heart. He was beginning to grow infirm; but he made a journey to Rome on purpose to congratulate Urban the Eighth (the title of the new Pope,) on his accession. Galileo spent two months at Rome, during which he was received with the most marked distinction by the Pope, who sent a complimentary letter concerning him to Ferdinand, the successor of Cosmo as grand duke of Tuscany.

Notwithstanding the narrow escape of Galileo in 1616, from the power of the Inquisition; notwithstanding the generous conduct of the Pope and some other high ecclesiastical authorities, Galileo could not suppress a vein of bitter sarcasm and contempt in many of his writings, whenever he had occasion to allude to the opposition rendered to his philosophical views. Pensions, too, which he and his son received from the Pope, though they ought not to have made him palter with the truth, should at least have made him observe a delicate caution in running counter to the current state of things. But he forgot all this. In 1632, he published a work in which three characters are made to converse on the Copernican system; one of whom is a resolute follower of the old system; another is a Copernican; and a third proposes doubts, suggests difficulties, and enlivens the gravity of the dialogue by his wit and pleasantry. The Copernican was made to be triumphant in every part. What was still more incautious, Galileo wrote a preface in which the former doings of the Inquisition were commented on with the most poignant satire.

This act rendered the remainder of Galileo's life one of disappointment and sorrow. Pope Urban felt indignant at this return for the kindness which he had shown to Galileo, and immediately sanctioned the summoning of the philosopher before the Inquisition. The grand duke of Florence interposed, but in vain; and in the spring of 1633, Galileo appeared before the dread tribunal. At the age of nearly seventy, infirm, fatigued, and humiliated, he was ordered to reside at Rome in strict seclusion, till the inquiry should be terminated. At first he was confined so closely as to injure his already feeble health, but at the earnest entreaty of his friends he was allowed a certain degree of personal liberty. The inquiry consisted first of an examination into the contents of the obnoxious books; next a personal examination of Galileo; and lastly, the hearing of his defence. This defence is admitted to have been a very weak one; for he had evidently broken a solemn promise made to the Inquisition in 1616. The sentence of the tribunal was, that Galileo should solemnly abjure the whole of the new doctrines contained in the Copernican theory; that he should be imprisoned during the pleasure of the Inquisition; and that he should perform certain penitential offices at stated intervals.

The sentence was inflicted, and the remaining nine years of Galileo's life were years of pain and humiliation. He was ordered to remain in seclusion at his villa of Arcetri, near Florence, where he died in 1643. The Pope Urban never forgave the act which led to Galileo's second summons before the Inquisition, and never forgot the terms of the sentence imposed; but he at the same time attended to all applications made with a view to lighten, without disobeying, the personal effects of the sentence. The intervening years of Galileo's life were spent in the society of a few friends, and in the pursuit of various scientific studies. But the serenity of the philosopher was gone. He was under restrictions which grated on his high spirit; he had been forced to abjure doctrines which he still believed to be true, and which subsequent ages have confirmed; he was subject to a bodily complaint which kept him constantly in pain; he lost the sight, first of one eye, and then of both; and lastly the few ties of a domestic nature which bound him (he was never married) were broken at the time when he most needed their comforting influence.

Thus died Galileo Galilei, a man who was far in advance of his age. Science regards him as one of her most valued sons; and as century succeeds century, the importance of his discoveries becomes more and more apparent.



GALILEO'S VILLA, AT ARCETRI.

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